

What is claimed is:

1. An optical detection liquid handling system, comprising:
 - a frame;
 - an X-Y-Z robot connected to the frame;
 - a plurality of liquid aspiration and dispensing nozzles connected to the X-Y-Z robot;
 - a positioning system configured to position the X-Y-Z robot relative to the frame,thereby positioning the plurality of liquid aspiration and dispensing nozzles relative to the frame;
 - a flow cell in each of the liquid aspiration and dispensing nozzles;
 - a fiber optic probe in communication with each of the flow cells; and
 - a spectrophotometer, wherein each of the fiber optic probes are multiplexed to the spectrophotometer.
2. The system of claim 1, further comprising:
 - a positive displacement syringe or other mechanisms of liquid displacement or transfer in communication with each of the liquid aspiration and dispensing nozzles, wherein movement of the positive displacement syringe causes the liquid aspiration and dispensing nozzle to either dispense or to aspirate liquid.
3. The system of claim 1, wherein the flow cell comprises a portion of the liquid aspiration and dispensing nozzle that is optically transparent to light in the wavelength of 190 nm to 800 nm.
4. The system of claim 1, wherein the flow cell comprises an optically transparent element on either side of the liquid aspiration and dispensing nozzle.
5. The system of claim 4, wherein each optically transparent element is capable of light transmission in the 190 nm to 800 nm range.
6. The system of claim 1, wherein each fiber optic probe comprises at least a pair of fiber optic cables, with each cable extending from locations around the flow cell.

7. The system of claim 1, wherein the spectrophotometer is adapted to analyze light in the 190 to 800 nm range.
8. The system of claim 7, wherein the spectrophotometer is adapted to analyze ultraviolet light.
9. The system of claim 7, wherein the spectrophotometer is adapted to analyze visible light.
10. The system of claim 1, wherein the frame is adapted to receive standard reaction well plates thereon such that the liquid aspiration and dispensing nozzles can be moved over or into the reaction wells of the reaction well plate.
11. The system of claim 10, wherein the standard reaction well plate comprises a single reaction well or a multiple arrangement of reaction wells.
12. The system of claim 10, wherein the standard reaction well plate is a 96 well reaction plate.
13. The system of claim 1, wherein the spectrophotometer measures the absorption or transmittance of light within the range of 190 nm to 800 nm through the liquid within the flow cells.
14. The system of claim 1, wherein a volume of the flow cell is less than 50 ul.
15. The system of claim 1, wherein a volume of the flow cell is less than 20 ul.
16. A method of spectrophotometrically analyzing a plurality of liquid samples, comprising:
 - aspirating the plurality of liquid samples into a corresponding plurality of liquid aspiration and dispensing nozzles in a liquid handling robot;
 - passing light through a flow cell in each of the liquid aspiration and dispensing

nozzles containing the liquid samples; and
spectrophotometrically analyzing the light passing through each of the flow cells.

17. The method of claim 16, wherein passing light through a flow cell in each of the liquid aspiration and dispensing nozzles comprises:

passing light through at least a pair of fiber optic cables, wherein each cable extends from a location around the flow cell.

18. The method of claim 16, wherein spectrophotometrically analyzing the light passing through each of the flow cells comprises:

sequentially analyzing the light passing through the fiber optic cables with a spectrophotometer, wherein at least a pair of fiber optic cables are multiplexed to the spectrophotometer.

19. The method of claim 16, wherein the light passing through each of the flow cells is spectrophotometrically analyzed while a reaction is performed within the flow cell.

20. The method of claim 19, wherein the reaction comprises nucleic acid synthesis or degradation and the components thereof.

21. The method of claim 19, wherein the reaction is biochemical including the components thereof.

22. The method of claim 19, wherein the reaction is chemical including the components thereof.

23. The method of claim 19, wherein the reaction is cell based including the components thereof.

24. The method of claim 19, wherein the reaction is PCR and components thereof.

25. The method of claim 19, wherein the reaction is UV and/or visible natural or synthetic absorptive compounds within the range of 190 nm to 800 nm.

26. The method of claim 19, wherein the reaction is with nucleic acids and oligonucleotides including the components thereof.
27. The method of claim 19, wherein the reaction is with antibodies including the components thereof.
28. The method of claim 19, wherein the reaction is with proteins and /or peptides including the components thereof.
29. The method of claim 19, wherein the reaction is with fluorescent compounds including the components thereof.
30. The method of claim 19, wherein the reaction is with biological fluids including the components thereof.
31. The method of claim 16, further comprising:
moving the liquid aspiration and dispensing nozzles on X-Y-Z axes of the liquid handling robot; and
dispensing the plurality of liquid samples from the corresponding plurality of liquid aspiration and dispensing nozzles; and
repeating the aspirating and dispensing of liquid samples to optimize liquid product concentration characteristics based on results of the spectrophotometric analysis.
32. A method of assaying a plurality of samples, comprising:
performing a plurality of reactions in a plurality of liquid aspiration and dispensing nozzles in a liquid handling robot; while
spectrophotometrically analyzing light passing through each of the plurality of liquid aspiration and dispensing nozzles.
33. The method of claim 32, wherein the samples are biological, biochemical or chemical samples.

34. The method of claim 32, wherein the reactions occur in flow cells in the plurality of liquid aspiration and dispensing nozzles in the liquid handling robot.
35. The method of claim 33, wherein spectrophotometrically analyzing light passing through each of the plurality of liquid aspiration and dispensing nozzles comprises:
sequentially analyzing light passing through each of the flow cells with a spectrophotometer, wherein the plurality of liquid aspiration and dispensing nozzles are multiplexed to the spectrophotometer.
36. The method of claim 35, wherein the spectrophotometer is multiplexed to receive optical signals from each of the flow cells.
37. A method of doing business, comprising:
simultaneously reacting a plurality of samples in a plurality of liquid aspiration and dispensing nozzles in a liquid handling robot;
spectrophotometrically analyzing each of the plurality of samples with a spectrophotometer, wherein each of the plurality of liquid aspiration and dispensing nozzles are multiplexed to the spectrophotometer; and
compiling result data of the spectrophotometric analysis of each of the plurality of samples.
38. The method of claim 37, wherein the samples are biological, biochemical or chemical samples.
39. The method of claim 37, further comprising:
selecting a preferred sample by analyzing the compiled results of the spectrophotometric analysis of each of the plurality of samples.
40. The method of claim 37, wherein the samples are spectrophotometrically analyzed in real time.

41. The method of claim 37, further comprising:
exporting the result data of the spectrophotometric analysis of each of the plurality of samples.
42. An optical detection liquid handling system, comprising:
a liquid handling robot;
a plurality of liquid aspiration and dispensing nozzles connected to the liquid handling robot; and
a spectrophotometer, wherein each of the liquid aspiration and dispensing nozzles are multiplexed to the spectrophotometer.
43. The system of claim 42, wherein each of the liquid aspiration and dispensing nozzles comprise a flow cell, and wherein each of the flow cells are multiplexed to the spectrophotometer by a pair of fiber optic cables.
44. The system of claim 42, wherein the liquid handling robot is an X-Y-Z robot.
45. The system of claim 4, wherein each of the plurality of liquid aspiration and dispensing nozzles are independently operable.
46. The system of claim 41, wherein each of the flow cells is multiplexed to the spectrophotometer by a pair of fiber optic cables.
47. The system of claim 1, wherein each of the plurality of liquid aspiration and dispensing nozzles are independently operable.
48. The system of claim 16, wherein each of the plurality of liquid aspiration and dispensing nozzles are independently operable.